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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2019/2020

HPC2011 – INTRODUCTORY COURSE IN PHARMACOLOGY

29 FEBRUARY 2020

9:00 am – 11:00 am

(2 Hours)

INSTRUCTIONS TO STUDENTS

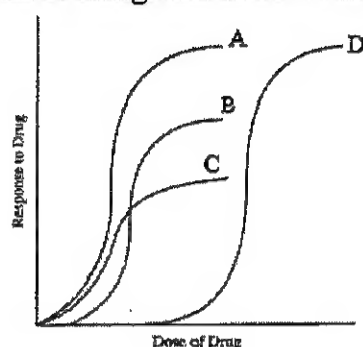
1. This question paper consists of 5 pages with 5 questions only.
2. Answer **ALL** questions. All questions carry equal 10 marks and the distribution of the marks for each question is given.
3. Please print all your answers in the Answer Booklet provided.

SHORT ANSWER TYPE (SAT) QUESTIONS

Answer ALL questions [50 marks, 10 marks each]

Question 1

- A. The log response curve below shows FOUR agonist drugs A, B, C and D. Briefly explain the agonist and/or antagonist effect of these FOUR drugs.



[2 marks]

- B. Name TWO targets for G proteins. [1 mark]
- C. Briefly explain, what happens when the guanosine diphosphate (GDP) bound to the G protein for a guanosine triphosphate (GTP) in the adenylyl cyclase/cAMP system? [1.5 marks]
- D. In the kinase cascade mechanism, the signal transduction generally involves dimerization of receptors, followed by autophosphorylation of tyrosine residues.
- What molecule have similar functions like a G protein in this kinase cascade mechanism? [0.5 mark]
 - Briefly explain, what happens when the molecule in (i) conveys the signal by GDP/GTP exchange from the SH2-domain protein, Grb (Growth factor receptor-bound protein)? [1.5 mark]
- E. What happens to the calcium-sensitive potassium channels when the voltage-gated calcium channels (VGCCs) is activated due to depolarization of membrane? [0.5 mark]
- F. How does short-term regulation of receptor function occurs? [0.5 mark]
- G. Name the druggability assessment which is predicted using compound in clinical trial and drug database. [0.5 mark]
- H. Nitric oxide (NO) and many lipid mediators are produced on demand. Name TWO release mechanisms for these mediators. [1 mark]
- I. How does release of the slow transmitter occur? [1 mark]

Continued...

Question 2

- A. One of the main disease treatment methods is using apoptosis strategy. Name ONE strategy used to stimulate apoptosis. [1 mark]
- B. Resolution is not the end of the immune response to infection or injury, thereby adding a third phase after acute inflammation and resolution, namely post-resolution. Name ONE event during post resolution? [1 mark]
- C. How do the drug molecules move around the body? [1 mark]
- D. What happen when acidic drugs undergo ion trapping phenomenon? [0.5 mark]
- E. If 100 mg of a drug is administered orally and 70 mg is absorbed unchanged, what is the bioavailability of this drug? [0.5 mark]
- F. Why do ionized or polar drugs generally fail to enter the central nervous system (CNS)? [1 mark]
- G. Give ONE consequences when the drugs go through pre-systemic metabolism and caused low bioavailability even when a drug is well absorbed. [1 mark]
- H. Give ONE consequences when the enzyme inhibitor predominate the same enzyme receptor site? [1 mark]
- I. Glomerular filtration is one of fundamental processes account for renal drug excretion. Name TWO factors this process affecting. [2 marks]
- J. Give ONE information you can get from elimination half-life ($t_{1/2}$)? [1 mark]

Continued...

Question 3

- A. What are parasympathomimetics? Describe briefly TWO mechanisms of action of parasympathomimetics. [3 marks]
- B. What is the difference between ionotropic and metabotropic receptors? [2 marks]
- C. Describe briefly TWO strategies used for antibacterial treatment. [2 marks]
- D. Describe briefly ONE mechanism of action of antiviral drug. [1 mark]
- E. How does alkylating agents kill cancerous tumors? Describe briefly ONE mechanism of resistance. [2 marks]

Question 4

- A. How do excitatory and inhibitory postsynaptic potentials generated in neuron cells? List ONE excitatory and inhibitory neurotransmitter molecules for each. [3 marks]
- B. What are the TWO main classes of anxiolytic and hypnotic drugs? How do they work? [2 marks]
- C. Define drug dependence. [1 mark]
- D. Describe briefly TWO mechanisms of action of antipsychotic drugs. [2 marks]
- E. Describe briefly TWO mechanisms of adverse drug reactions. [2 marks]

Continued...

Question 5

- A. Describe ONE mechanism of hepatotoxicity. [1 mark]
- B. What are biopharmaceuticals? [1 mark]
- C. Two anti-inflammatory medications that are available on the market and are widely used in medicine are Non-Steroidal Anti-Inflammatory medications (NSAIDS) and steroids. List TWO differences between these two drugs in term of their pharmacological properties. [1 mark]
- D. What is a diuretic? How does it work? [2 marks]
- E. Describe briefly TWO strategies for the hypertension treatment. List ONE drug class for each strategy. [2 marks]
- F. Describe briefly the mechanisms of TWO classes of antiasthma drugs. [2 marks]
- G. What is the application of antihistamines drug? [1 mark]

End of paper

